

Chemical and Physical Change Lab

Purpose: What are the differences between chemical and physical properties?
What are the differences between chemical and physical changes?

Safety: Wear goggles. Take standard precautions: Don't get chemicals in your eyes, don't ingest any chemicals. If you get liquid chemicals on your skin, wash it off.

Procedure: Note: This is a set of mini-experiments. They may be done in any order. Make sure to record all observations in a data table correlated to the procedure step number. Observations should include properties of the substances before and after any change, as well as what happens during any change.

Note: All amounts are approximate.

1. Chalk & Vinegar
 - a. Powder a small (~~1.000~~) piece of chalk with the mortar & pestle.
 - b. React the powdered chalk with ~~10 mL~~ of vinegar in a beaker. 5 drops
2. Starch & Iodine
 - a. Add a small amount of soluble starch (~~just a little on the end of a spoon~~ 5 drops) to a small beaker containing about 20 mL of water. 2 drops
 - b. Add 2 drops of tincture of iodine to the starch solution.
3. Alka-Seltzer
 - a. Drop about $\frac{1}{4}$ of an Alka-Seltzer tablet into a small beaker containing 50 mL of water.
4. Milk of Magnesia & Phenolphthalein
 - a. Add 1-2 drops of phenolphthalein to a test tube containing 5 mL of milk of magnesia.
5. Ammonia & Iron (III) chloride
 - a. Add 5 drops of ammonia to a small test tube containing 5 drops of iron (III) chloride solution.
6. Magnesium & HCl
 - a. Put 5 mL hydrochloric acid (HCl) (3 molar) in a test tube.
 - b. Add a piece of magnesium. Make sure to notice any temperature change.
 - c. Use empty inverted test tube to collect gas. Test for Hydrogen gas with a burning splint. (The teacher will demonstrate.)
7. HCl & Baking soda
 - a. Put 5 mL hydrochloric acid (HCl) (3 molar) in a test tube.
 - b. Use the scoopula to add some NaHCO_3 (baking soda). Make sure to notice any temperature change.

See questions on the back.

Sample Data (Observations) Table

| Step # | Properties of Starting Materials | During Change | Properties After Change |
|--------|----------------------------------|---------------|-------------------------|
| 1 | | | |
| 2 | | | |

Questions

1. List 3 physical properties you observed in this lab.
2. List 3 chemical properties you observed in this lab.
3. List four pieces of evidence from this lab that indicate a chemical change occurred.
4. List three physical changes you observed.
5. Distinguish between chemical and physical properties.
6. Distinguish between chemical and physical changes.

Conclusion: Write a conclusion summarizing the lab and answering the questions in the purpose. That means you need to explain the differences between chemical and physical properties and chemical and physical changes. Illustrate with examples from the lab. You will probably just be restating and summarizing the answers to some of the questions in paragraph form. You don't have to discuss every step, just give one or two examples to illustrate your statements.